



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 1**

**1 Congress Street, Suite 1100  
BOSTON, MA 02114-2023**

**Memorandum**

**Date:** April 28, 2014

**Subject:** Trichloroethylene Toxicity Information

**To:** Deb Szaro  
Deputy Regional Administrator

**From:** Meghan Cassidy, Chief  
Technical and Enforcement Support Section  
Office of Site Remediation

**Background**

- 2011 Office of Research and Development (ORD) finalized toxicological review of trichloroethylene (TCE).
- October 2011 Integrated Risk Information System (IRIS) toxicity values updated.
- 2011 IRIS updates include an inhalation reference concentration (RfC) and an oral dose (RfD) for non-cancer effects for use in evaluating effects of long-term (chronic) exposure.
- RfC and RfD are based in part on non-cancer effects, including some that may occur during very short exposure periods during early gestation.
- IRIS does not provide specific methodology to address this short-term exposure period.
- Pathway of primary concern for such short-term exposures is vapor intrusion (indoor air).
- EPA indoor air screening levels (long-term/chronic):
  - Residential  $10E-6$  (cancer) risk =  $0.43 \text{ ug/m}^3$   
Hazard Index (HI) = 1 (non-cancer) =  $2.1 \text{ ug/m}^3$
  - Commercial/Industrial –  $10E-6$  =  $3 \text{ ug/m}^3$   
HI = 1 =  $8.8 \text{ ug/m}^3$
- In the absence of national guidance some regions (Regions 9 and 10) have developed their own policies.
- In addition, a few states including Massachusetts and New Hampshire, have developed guidance/policy.

- MA uses the IRIS RfC and an “adjustment factor” to address short-term exposures to TCE.
- Summary of MA concentrations and specific actions required is attached.

#### Issue

- ORD working on an IRIS Addendum which includes additional review of short-term exposure.
- OSWER is working on further guidance on the issue. Date of release to regions unknown.
- Outstanding issues involve adjustments/use of IRIS values to account for short-term exposures and implementation/policy issues associated with such short exposure times.
- Absent the IRIS Addendum and specific guidance on this issue, regions are faced with significant technical uncertainty and lack of direction on science policy/implementation issues.

#### Recommendation

- Region 1 should support the expeditious finalization and release of EPA technical/policy guidance addressing short-term exposure to TCE in indoor air.

cc: James Owens  
Nancy Barmakian  
Nancy Grantham  
Stan Chin

Excerpt from Massachusetts updated Fact Sheet entitled "TCE Toxicity Information: Implications for Chronic and Shorter-Term Exposure" dated March 27, 2014 which sets forth specific requirements for sites where TCE is detected in indoor air at sites subject to the Massachusetts Contingency Plan (MCP).

### Pregnant Women and Those Who May Become Pregnant

Residential Exp. Scenario	Indoor Air Conc.	Concern Level	Actions
Fetal development effects	$>6\mu\text{g}/\text{m}^3$ $= 2\mu\text{g}/\text{m}^3 \times 3$	Imminent Hazard 2-hr Notification	Immediate Response Actions*
Workplace Exp. Scenario	Indoor Air Conc.	Concern Level	Actions
Fetal development effects	$>24\mu\text{g}/\text{m}^3$ $= 8\mu\text{g}/\text{m}^3 \times 3$	Imminent Hazard 2-hr Notification	Immediate Response Actions*

∴ 24-hour average time...

\*Immediate response actions – Goal to reduce levels to at least  $6\mu\text{g}/\text{m}^3$  or  $24\mu\text{g}/\text{m}^3$ , respectively, ASAP (within several days if possible).

### All Receptors

Residential Exp. Scenario	Indoor Air Conc.	Concern Level	Actions
Immune System Effects	$>20\mu\text{g}/\text{m}^3$	Imminent Hazard 2-hr Notification	Immediate Response Actions**
Workplace Exp. Scenario	Indoor Air Conc.	Concern Level	Actions
Immune System Effects	$>90\mu\text{g}/\text{m}^3$	Imminent Hazard 2-hr Notification	Immediate Response Actions**

\*\* Initiated on an expedited time table.

Fact sheet includes recommendations for action to be taken 1) immediately; 2) as soon as possible (broken down into "up to two weeks" and "up to two months").

